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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,632	07/01/2003	Masaaki Ashida	023971-0287	9880

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EXAMINER

TRAN, BINH Q

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/609,632

Applicant(s)

ASHIDA ET AL.

Examiner

BINH Q. TRAN

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07/08/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

***Claims 1-2, and 17 are rejected under 35 U.S.C. 102 (b) as being anticipated by Sugiura et al. (Sugiura) (Patent Number 6,082,103).***

Regarding claims 1 and 17, Sugiura discloses an engine exhaust apparatus comprising: an exhaust manifold (10) which comprises: a plurality of exhaust branches (e.g. 1) extending toward a confluence portion (e.g. 2), from respective upstream ends to be connected with cylinders of an engine; and a straight pipe section (e.g. 4) extending from the confluence portion at which exhaust streams in the exhaust branches merge, toward a downstream end adapted to be connected to an exhaust purifying catalyst (See Figs. 1, 5, and 8-9; col. 4, lines 31-52; col. 8, lines 26-63).

Regarding claim 2, Sugiura further discloses a flare section expanding from the straight pipe section to the downstream end of the exhaust manifold (See Figs. 1, 5, and 8-9; col. 4, lines 31-52; col. 8, lines 26-63).

***Claims 1, 4-5, 8-13, and 17 are rejected under 35 U.S.C. 102 (b) as being anticipated by Haneda (Patent Number 6,009,706).***

Regarding claims 1 and 17, Haneda discloses an engine exhaust apparatus comprising: an exhaust manifold (2) which comprises: a plurality of exhaust branches (e.g. 4-1, 4-2, 4-3, 4-4) extending toward a confluence portion (e.g. 20), from respective upstream ends to be connected with cylinders of an engine; and a straight pipe section (e.g. 20, 308) extending from the confluence portion at which exhaust streams in the exhaust branches merge, toward a downstream end adapted to be connected to an exhaust purifying catalyst (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 4, Haneda further discloses a first combined branch into which two of the exhaust branches merge together, and a second combined branch into which other two of the exhaust branches merge together, and the first and second combined branches merge together at the confluence portion into the straight pipe section (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 5, Haneda further discloses that the exhaust branches connected to the first combined branch are branches to be connected with two of the cylinders of the engine which are not consecutive in a firing order of the engine, and the exhaust braches connected to the

Art Unit: 3748

second combined branch are branches to be connected with two of the cylinders of the engine which are not consecutive in the firing order of the engine v

Regarding claim 8, Haneda further discloses that the upstream end of the second combined branch at which two of the exhaust branches meet is located on an upstream side of an upstream end of the first combined branch at which other two of the exhaust branches meet (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 9, Haneda further discloses that the exhaust branches connected to the second combined branch extend laterally toward each other (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 10, Haneda further discloses that the first and fourth branches are connected to the first combined branch, and second and third branches are connected to the second combined branch, the first, second, third and fourth branches are the exhaust branches for first, second, third and fourth cylinders of the engine which are arranged in a row so that the second and third cylinders are located between the first and fourth cylinders in the row of the cylinder (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 11, Haneda further discloses that the second combined branch comprises a straight section (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 12, Haneda further discloses that the first combined branch comprises a straight section shorter than the straight section of the second combined branch (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

Regarding claim 13, Haneda further discloses that the straight sections of the first and second combined branches extend side by side to the straight pipe section; and the first combined

Art Unit: 3748

branch is located between the second combined branch and the upstream ends of the exhaust manifold (See Figs. 1-7, and 18; col. 2, lines 24-67; col. 4, lines 10-67).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 3, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suguira in view of design choice.***

Regarding claims 3, and 14-16, Suguira discloses all the claimed limitation as discussed above except that the expanding angle of the flare section is smaller than or equal to 60°; the angle between a center line of the straight pipe section and a center line of the exhaust purifying catalyst is smaller than or equal to 30°; the wall thickness of the catalyst smaller than or equal to 3 mm; and the exhaust valve opening timing is set in a range from 30° before a bottom dead center to the bottom dead center.

Regarding the specific range of the expanding angle of the flare section; the wall thickness of the catalyst; and the exhaust valve opening timing, it is the examiner's position that a range smaller than or equal to 60° of expanding angle; smaller than or equal to 3 mm of the wall thickness of the catalyst; smaller than or equal to 30° of the angle between a center line of the straight pipe section and a center line of the exhaust purifying catalyst; and from 30° before a bottom dead center to the bottom dead center of the exhaust valve opening timing, would have

Art Unit: 3748

been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the exhaust gas, as well as the concentration of oxygen in the exhaust gas, properties of materials for making the NO<sub>x</sub> storage catalyst, and the controlled temperature of the catalytic converter. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

*Claims 3, 6-7, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haneda in view of design choice.*

Regarding claims 3, 6-7, and 14-16, Haneda discloses all the claimed limitation as discussed above except that the expanding angle of the flare section is smaller than or equal to 60°; the confluence angle smaller than or equal to 20°; the angle between a center line of the straight pipe section and a center line of the exhaust purifying catalyst is smaller than or equal to 30°; the wall thickness of the catalyst smaller than or equal to 3 mm; and the exhaust valve opening timing is set in a range from 30° before a bottom dead center to the bottom dead center.

Regarding claims 3, and 14-16, Haneda discloses all the claimed limitation as discussed above except that the expanding angle of the flare section is smaller than or equal to 60°; the confluence angle smaller than or equal to 20°; smaller than or equal to 3 mm of the wall thickness of the catalyst; smaller than or equal to 30° of the angle between a center line of the straight pipe section and a center line of the exhaust purifying catalyst; and from 30° before a bottom dead center to the bottom dead center of the exhaust valve opening timing, would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the exhaust gas, as well as the concentration of oxygen in the

Art Unit: 3748

exhaust gas, properties of materials for making the NO<sub>x</sub> storage catalyst, and the controlled temperature of the catalytic converter. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. In *re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; In *re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such ranges are termed "critical" ranges, and the applicant has the burden of proving such criticality. In *re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; In *re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. In *re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; In *re Normann et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; In *re Irmischer*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In *re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.



***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Kim (Patent Number 6745561), Biggs (Patent Number 5816044), Watanabe et al. (Patent Number 5787709), Kusabiraki et al. (Patent Number 6702062), and Shimada et al. (Patent Number 5410877) all disclose an exhaust gas purification for use with an internal combustion engine.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (703) 305-0245. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.



BT  
July 08, 2004

Binh Tran  
Patent Examiner  
Art Unit 3748